

# A systematic review and meta-analysis of Coenzyme Q10 in reducing mortality in patients with chronic heart failure

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A systematic review and meta-analysis of Coenzyme Q10 in reducing mortality in patients with chronic heart failure

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### Review question

Does coenzyme Q10 supplementation reduce mortality in patients with chronic heart failure?

### Searches

A systematic search of electronic databases was conducted to identify articles relating to the outcomes of CoQ10 in chronic heart failure. The following databases were used for searching, Ovid MEDLINE (1946-October 19th), EMBASE (1973-October 18th), Cochrane Library, PubMed, ISI Web of Science, Allied and Complimentary Medicines Database (AMED), and CINAHL Plus. The search started on October 16th 2018, and was conducted until November 10th 2018. The search was conducted without any restrictions on type of study, time period, and language. Studies were included if they were randomised controlled trials assessing the if supplementation with coenzyme Q10 reduces mortality in patients with chronic heart failure.

The following three terms were used as key words and medical subject headings where applicable (MeSH): ("heart failure"), ("coenzyme Q10" or "ubiquinone" or "ubidecarenone"), and ("mortality" or "death").

### Types of study to be included

Randomised controlled trials.

The inclusion criteria:

- Randomised controlled trials aiming to determine if CoQ10 supplementation will reduce mortality in patients with chronic heart failure
- Patients aged over 18 years old
- Patients at any stage of the NYHA classification of heart failure
- Patients with heart failure due to left ventricular systolic dysfunction (LVSD), which is associated with a reduced left ventricular ejection fraction, and also heart failure with a preserved ejection fraction, and left and right sided heart failure.

The exclusion criteria:

- Patients younger than 18 years old
- Patients with acute heart failure
- Observational studies, systematic reviews, meta-analyses, grey literature, abstracts only, unpublished studies, quasi-randomised trials, and trials assessing the use of CoQ10 in other diseases.

### Condition or domain being studied

Coenzyme Q10 supplementation affecting mortality in chronic heart failure patients.

### Participants/population

Adults above 18 years of age with chronic heart failure.

**Intervention(s), exposure(s)**

Exposure to the coenzyme Q10 supplement to assess its effects on mortality in patients with chronic heart failure.

**Comparator(s)/control**

Placebo.

**Context**

**Main outcome(s)**

The use of the coenzyme Q10 supplementation in reducing mortality for patients with chronic heart failure.

*Timing and effect measures*

The effectiveness of this was measured by the outcomes of:

Cardiovascular mortality

**Additional outcome(s)**

Cardiac Function (echocardiography and cardiac peptides)

Incidence of hospital stays

Improvement in NYHA class

NT-proBNP levels

Occurrence of life-threatening events

Length of hospitalization

Quality of life

Diastolic dysfunction

Mitral regurgitation

**Data extraction (selection and coding)**

All identified studies will be imported to Microsoft Excel for the manual removal of duplicate records. The researcher will screen all titles and abstracts using the selection criteria. Then, the full text of eligible articles will be screened independently by the researcher. Any disagreement or uncertainties about study inclusion will be resolved by discussion of the researcher with the reviewers. Upon retrieval of the full-text studies, the references of those studies will also be hand-searched to ensure all relevant articles are obtained.

The data will be extracted from the relevant studies using standardised tables to compare and contrast:

- Study design
- Country
- Primary outcomes

- Sample size

- Significance

### Risk of bias (quality) assessment

The quality assessment will be conducted using the COCHRANE Risk of Bias Tool. This will be conducted by an independent reviewer, and discrepancies will be resolved with a second check by a second reviewer.

### Strategy for data synthesis

We will provide a descriptive review and a table of all findings from the included studies, which will present the review, study design, sample size, and outcomes. Next, a descriptive analysis of aggregate study will be used (tabulation of all data will be presented in the review). In the future, a meta-analysis is planned for quantitative synthesis of the data. A second reviewer will cross check the findings of all studies.

### Analysis of subgroups or subsets

None planned

### Contact details for further information

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### Organisational affiliation of the review

University of Birmingham  
<https://www.birmingham.ac.uk/index.aspx>

### Review team members and their organisational affiliations

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Dr Zahraa Jalal. University of Birmingham  
Dr Alan Jones. University of Birmingham

### Anticipated or actual start date

01 October 2018

### Anticipated completion date

22 January 2019

### Funding sources/sponsors

University of Birmingham

### Conflicts of interest

### Language

English

### Country

England

### Stage of review

Review\_Ongoing

### Subject index terms status

Subject indexing assigned by CRD

### Subject index terms

Heart Failure; Humans; Ubiquinone; Ubiquinone Q2; coenzyme Q10

### Date of registration in PROSPERO

23 January 2019

### Date of publication of this version

23 January 2019

Details of any existing review of the same topic by the same authors

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

### Versions

23 January 2019

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